



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



CE

Sentinel™

Efficient, portable fluid purification protecting hydraulic systems 24/7.



ENGINEERING YOUR SUCCESS.

Portable fluid purification. Protect cost of ownership.

The Sentinel™ is designed to 'stand guard' over your hydraulic systems 24/7 – increasing productivity by eliminating moisture in the oil.

Water is the second most destructive contaminant – typically 200ppm water can reduce bearing life by 48% or more. Moisture accelerates the 'aging' of hydraulic fluids, reducing oil lifetime by typically more than 50%.

Fact 1

High moisture content in system oil will reduce life-time

Fact 2

The potential for expensive downtime will be increased as a direct result of moisture ingress

Fact 3

The Sentinel, incorporated into a planned maintenance programme, will reduce costs and increase machine efficiency



Portable, versatile and alive with technology, the Sentinel takes fluid purification to a new level of dependability and efficiency.

Bringing together Parker's unrivalled filtration expertise and industry know-how in one affordable and compact unit, the Sentinel stretches maintenance budgets and boosts productivity, by streamlining the dehydration process and reducing costly, unscheduled downtime.

Compact, lightweight and tough, the Sentinel is engineered to deliver outstanding results in every environment – whenever, and wherever there's an issue with water-contaminated hydraulic oils and transformer fluids.



One solution fits all

A uniquely versatile design means that samples can be taken directly from a hydraulic reservoir, barrel, vehicle or oil storage tank, making the Sentinel ideal for applications ranging from renewable energy, marine and offshore to manufacturing, mobile, agriculture, military and ground handling.

With a laser detection particle counter available as an option, the Sentinel is totally self-contained. So you won't need extra equipment or face problems with equipment compatibility. Now dehydration is simpler, and more efficient all round.

Moisture in oil shortens machinery life – plain and simple. The Sentinel helps put a stop to that...

...by lowering the cost of ownership through the introduction of pre-scheduled maintenance using the Sentinel in 3 key ways.

1 By having a pre-scheduled maintenance programme in place.

Thinking about condition monitoring of multiple machines, the Sentinel's portability and easy connection makes it ideal where there is a planned maintenance schedule and it can be wheeled from vehicle to vehicle and operated overnight.



Power Generation Electrohydraulic Control Systems

"The Sentinel has already started to add value and reduce maintenance downtime."

2 Having the Sentinel as a permanent installation but working when the moisture exceeds a pre-set level.

Connected as a permanent oil condition clean-up unit, for example connected to ship thruster systems - the Sentinel operates as a 'babysitter', monitoring moisture levels and detecting increases at which point it activates.



Marine Propulsion, Steering Systems, Thrusters

"Operating the Sentinel round the clock keeps moisture ingress under control and a thing of the past."

3 Having the Sentinel permanently connected to a system to continuously condition the oil.

Working in accordance with a programmed configuration, the Sentinel will provide a reliable and effective condition monitoring 'partner' ideally used in industrial applications such as CNC hydraulics, steel pressing equipment and vacuum forming equipment.



Industrial Lubrication Systems Process Controls

"The heavier the industrial application, the better the Sentinel seems able to perform."

The Sentinel
Fast, efficient, portable.

Feature-rich and cost-efficient.

With the Sentinel, extra productivity comes as standard. Packed with advanced features, and engineered to the highest quality, no other dehydration equipment gives you more for your money.

Proven vacuum dehydration technology

The Sentinel uses vacuum dehydration technology, so that only clean, dry oil re-enters the reservoir system via the outlet port.

On board data display and storage

Test data is displayed instantly on an IQAN MD3 screen, for real time observation. Stored data can be downloaded straight to a PC or laptop for analysis via a standard USB connection.

Rapid detection and removal

Fast detection of water contaminants is provided through embedded % RH moisture, as well as optional solid particle contamination detector. The high visibility digital display provides easy assessment of fluid condition, and shows measured parameters including moisture sensor readings as a % of relative humidity.

Fluid and pressure control

The Sentinel operates at flow rates of 12 litres /min, with a maximum online operating pressure of 0 - 4 Bar.

Long life automatic operation

In Sentinel mode, the system will automatically turn on, measure water content and run dehydration cycling if necessary, shutting itself off once fluid reaches the % RH set point.

(Electrical requirements are 380 - 420 VAC, 3Ph, 60Hz for other voltages consult Parker.)





Recommendation

The Sentinel is most recommended for:

- Systems with moisture level typically <2% RH.
- Systems up to 3.000 litres of oil content.
- The Digi water in oil test kit is recommended if the moisture level is not known before measuring.

Fully compliant

As a Parker product, the Sentinel is specified to meet the most exacting international industry standards

- CE Marked
- EC Declaration of Conformity
- Machinery Directive

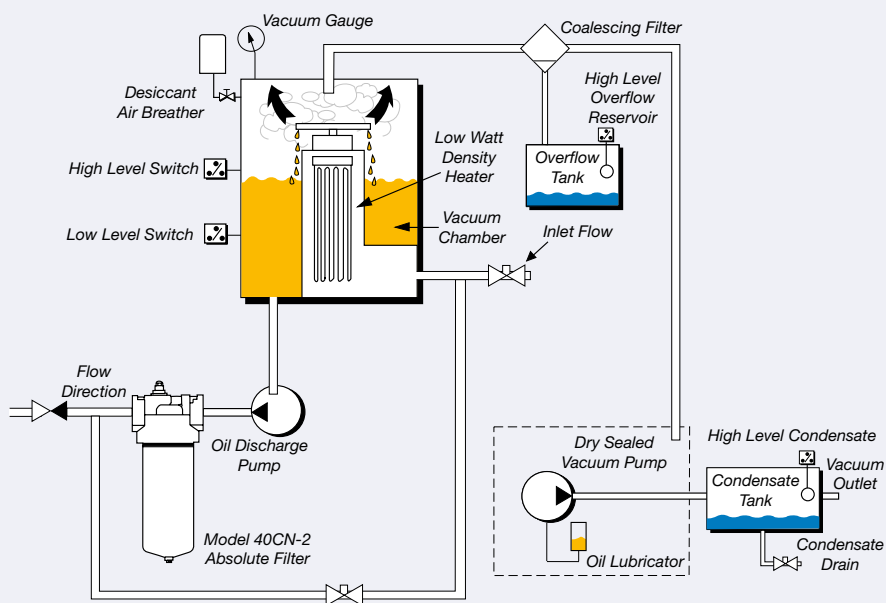
Quick connection

Connecting the Sentinel is quick and reliable. Side mounted fluid connectors are secured with screw fittings: 22L metric for outlet and inlet and water drain connector size 15L metric. Parker can supply dedicated hoses and fittings for use with most hydraulic and hydrocarbon fluids.

Hardwearing and lightweight

The tough enclosure and fully isolated impact-resistant panel provide excellent protection in the most demanding of applications, combined with a lightweight construction, making the Sentinel the ideal diagnostic service tool.

Principles of Operation



Contaminated fluid is drawn through the Sentinel circuit by vacuum. The fluid is subjected to optimum vacuum, temperature and surface area to reduce the boiling point of water and convert water to water vapour. Optimum temperature is achieved with a low watt density heater. Maximum surface area is accomplished by passing the fluid through a unique diffusing column.

The fluid is protected from excessive heat by circulation for a fixed time period. When the pre-set time period is realized, the fluid discharges through high efficiency filtration to the main system reservoir. Water vapour that has been extracted from the system is exposed to a series of coalescers to eliminate any carryover oil vapour in the exhaust stream.

The process repeats until the desired steady state condition is achieved.



Proven technology, trusted to perform.

Precision engineered by Parker, and trusted by leading companies around the world, Sentinel technology is proven to perform in a huge variety of applications, even under the most demanding conditions.

Construction and mining

The ideal solution to condition hydraulic fluid.

Power generation

Essential control of water contamination in lubrication fluids.

Automotive manufacturing

The primary diagnostic and service instrument for predictive water monitoring programmes.

Aviation

Ease, light weight and portability are key for water removal and monitoring in aviation flushing units and simulators.

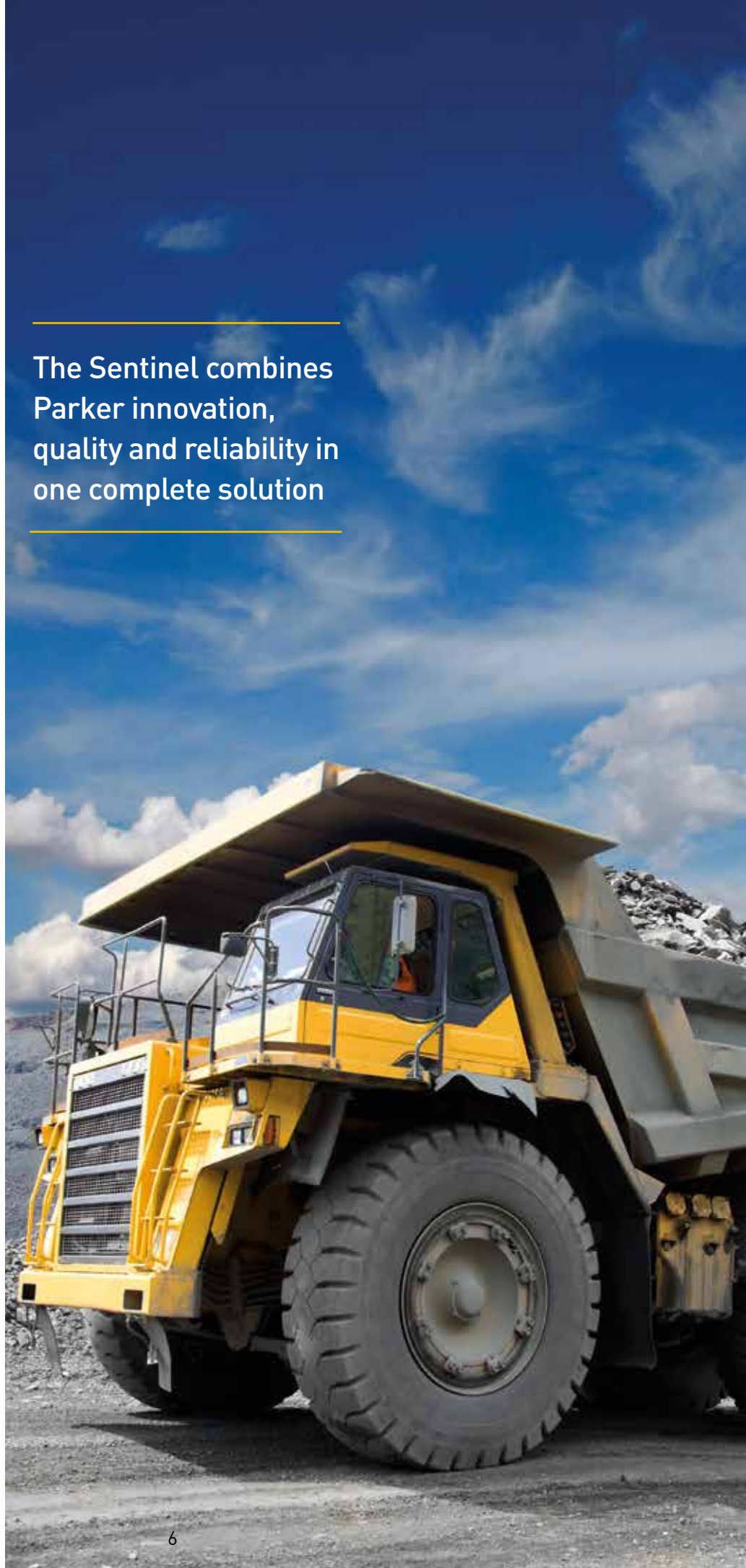
Paper and pulp

Providing accuracy and speed for routine maintenance and emergency dehydration.

Marine

Vital quality control for shipboard hydraulic, steering system and bow thrusters.

The Sentinel combines Parker innovation, quality and reliability in one complete solution



IQAN System

One of the highlights of the new Sentinel unit is the addition of Parker's IQAN system. The IQAN is an electronic PLC interface that controls many of the operating functions on the Sentinel. With IQAN, the operator can customize set points for various applications within their facility. Some of the user defined set points are:

- moisture high limit
- moisture set point (low limit)
- temperature
- vacuum purge cycle
- auto condensate drain
- energy conserving features

The operator can customise set points for various applications within their facility.



Three modes of operation

1. Standard

Conventional purifiers require that the reservoir fluid be at 70°C before efficient water removal occurs. This could take hours if the ambient temperatures are low and the reservoir volumes are large. Standard mode allows for less power consumption by drawing the fluid through the unit in a unique cyclic method. The fluid is drawn into the unit and held while heat and vacuum act on it to remove water. Every two minutes the fluid is discharged and the process repeats, conserving power that otherwise would be necessary to bring the entire main system reservoir to the required 70°C.

2. Sentinel

Sentinel mode acts the same as standard mode other than it samples by drawing in fluid from the reservoir and testing the water saturation point. If the level is less than the desired set point, the system will hibernate until the next sampling point. The minimum time between sampling is 20 minutes and the maximum is 240 hrs. (10 days)

3. Sample

Once started, three batches of hydraulic fluid will be drawn into the system where overall moisture level and temperature are averaged and displayed on the IQAN screen.

Sentinel mode will maintain constant dedicated vigilance to control water saturation in fluid while providing energy and labour savings.



Straight forward
to operate

The Sentinel is designed to operate in three simple modes, for maximum efficiency, longevity and ease of use:

Standard mode

When water is detected, the contaminated oil is drawn into the Sentinel for recirculating to achieve required % RH level of moisture.

Sentinel mode

System automatically turns on, to measure water content and run dehydration cycling if necessary, shutting itself off once fluid reaches the % RH set point.

Sample mode

Indicates which operational mode is required. Calculates the % RH of water within the system.

How the Sentinel works

Contaminated oil is drawn into the portable purification system by a vacuum of of -0.6 bar. The oil passes through the in-line, low watt density heater, where it is heated to the optimum temperature (70°C), before entering the distillation column where it is exposed to the vacuum through the use of a dedicated dispersal element.

This increases the exposed surface area of the oil and converts the water to a vapour, which is then drawn through the condenser by the vacuum pump. The vapour returns to water and drops into the condensate holding tank, to be drained off at a later stage.

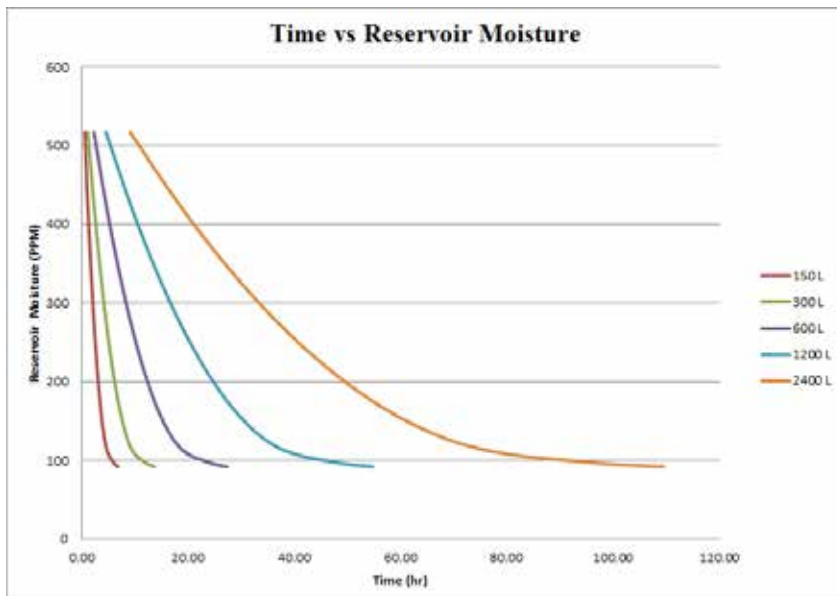
The water-free oil falls to the bottom of the vacuum chamber and is passed through a final particulate removal filter by a heavy duty lube oil pump, before re-entering the reservoir/system via the outlet port.



Performance

Potential Contaminant	Sentinel Performance
Solid particulate	ISO Cleanliness Code 14/13/10 Attainable
Water	Removes 100% of free water, 90% of dissolved water
Air/Gases	Removes 100% of free air and gases, 90% of dissolved air and gases

Typical Performance	
Tank Size	200 litre test drum
Run Time	16 hours
Fluid Type	Hydraulic
Water Content	Start: 7,000+ ppm (1%) Saturation pt: 5,000 ppm Stop: 200 ppm (0.005%)



The Sentinel core components

The Sentinel design and build represents the best in Parker technology and manufacturing.



Fig1. The Sentinel features a Parker IQAN electronic MD3 PLC interface controlling many of the Sentinel operating functions.



Fig2. Contaminated system oil is drawn into the Sentinel by a vacuum pump generating a vacuum of -0.8 bar.

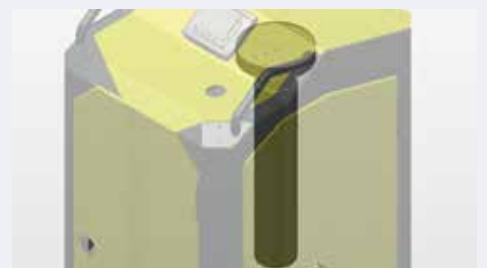


Fig3. Once heated to an optimum 70°C the oil enters a distillation column designed with a dedicated dispersal element.



Fig4. A Parker MS150 moisture sensor provides continuous monitoring of moisture content in the oil to determine moisture levels and operation.

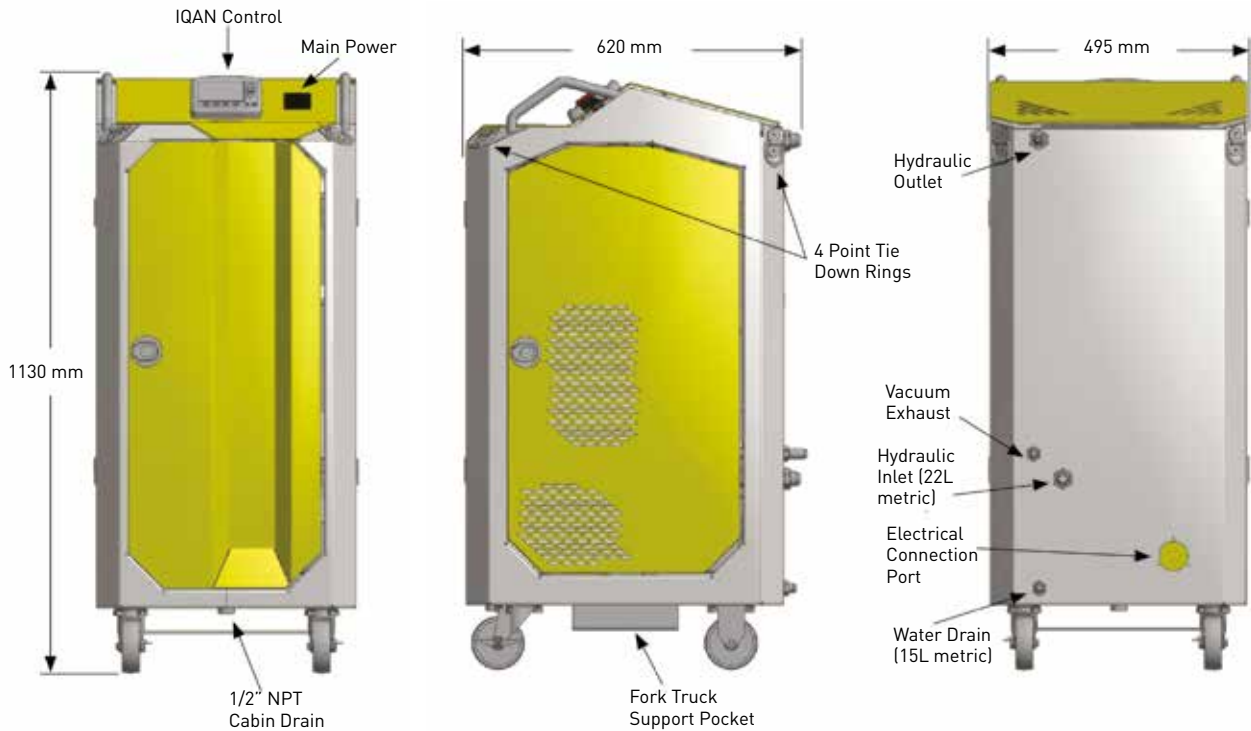


Technical data

The Sentinel – specification

Feature	Specification
Principle of operation	Vacuum dehydrator
Recalibration and servicing	Recommended every 12 months
Working pressure	0–4 bar (0 –60 psi)
Working viscosity	1–400 cSt
Flow range	12 l/min 5GPM
Fluid connection interface inlet & outlet:	22L metric
Fluid working condition	+70°C at – 0.8 bar
Ambient storage temperature for unit	–40°C to +80°C; –40°F to +176°F
Operating temperature for unit	–30°C to +80°C; –22°F to +176°F
Operating humidity range	5%RH to 100%RH
Fluid operating temperature (Oil)	+5°C to +80°C; +41°F to +176°F
Moisture sensor linear scale within the range	5%RH to 100%RH
Computer compatibility connection	Unit to be connected to a laptop computer via USB port
Seals	Fluorocarbon
Vacuum pump type	Dry sealed vacuum pump
Particle filter type	5 micron 'iprotect' element
Heater type	6KW low - density heater
Power requirement	400VAC, 3P, 50Hz
Noise level at standard operation	60 dBA
Certification	IP54 rating (unit open) CE Marked EC Declaration of Conformity Machinery Directive
Weight	190 kg
IPDR - Particle Detector	Contact Parker
IQAN MD3 Memory size	80,000 logs
FPS - Fluid Property Sensor	Contact Parker

Sentinel – dimensions



How to order

Note: Dimensions and weights are approximate and are for reference only.

Part number	Description
945274	Standard unit
Optional accessories	<ul style="list-style-type: none"> - ACC6JH002 – Service Kit (Triceptor element, Coalescer element, Filter element, Vacuum Pump Oil) - ACC6JH003 - Vacuum Pump Oil (1 LITRE) - MS1504 - Moisture Sensor

Water in Oil

Maintain and protect your equipment, whilst eliminating damage caused by water in your oil.

The DIGI Water in Oil Test Kit provides state of the art, digital analysis and gives fast, accurate results for easy monitoring of trends.

- Prevent corrosion, cavitation or failure of your machinery by detecting water in oil, before any damage occurs.
- Minimise instability of additive packages and damaging microbe growth by monitoring your oil.
- Fully portable for use on-board or in the field, test cells are extremely robust, durable and easy to use.



The maximum flow for the PVS 2700 model is 170 l/min and the PVS 600 model shown above is 38 l/min.



Ordering Information

FGK17032PA: Low Range DIGI Water Kit
 FGK2101PA: Water in Oil Reagent Pack (50)

Range (LR): 0.02-1%, 100-3000ppm, 0-10%
 Test Time: 3 minutes
 Battery Life: Five years (10,000 tests)

When excessive moisture in the hydraulic oil demands an alternative Parker solution, the answer is a PVS

Specify a PVS alternative system when oil volumes for water purification are greater.

Reduce the catastrophic results of water contamination by eliminating water from the hydraulic system by using one of the PVS Series Portable Purification Systems.

Available in several models, the principle of the PVS is to draw water contaminated fluid out of a system then remove the water content and return the 'clean' fluid to the reservoir.

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